



ATESS Enerstack314

User Manual

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1 Introduction

1.1 Contents

This manual provides comprehensive product information and installation instructions for users of ATESS Enerstack314 series batteries manufactured by Shenzhen ATESS Power Technology Co., Ltd. (hereinafter referred to as ATESS).

Prior to using the product, please carefully review this manual and ensure it is readily accessible to installation, operation, and maintenance personnel.

ATESS will not notify users of any updates or revisions made to this manual. The content of the manual will be continuously updated and amended; therefore, slight discrepancies or errors with the actual product may occur. For the latest version of this manual, please refer to the actual product, contact your local distributor, or visit our website at www.atesspower.com.

1.2 Applicable Personnel

The applicable personnel must meet the following requirements:

- Battery installation should be carried out by professional electrical personnel certified by relevant departments.
- Operators should have a thorough understanding of the composition and working principle of the batteries.
- It is essential for operators to carefully read this manual.
- The operator should familiarize themselves with the relevant standards of the country/region where the project is located.

In case any issues arise during the installation process, installers can contact ATESS.

1.3 Sign

To ensure the safety of personal and property during installation or efficient use of this product, relevant information is provided in the manual along with appropriate symbols for emphasis. The following list outlines potential symbols used in this manual; please review them carefully to optimize your usage.

 Danger	This sign indicates a high potential hazard if not performed correctly as required, which could result in death or serious injury.
 Attention	This sign indicates a situation in which failure to comply with the required performance standards may result in equipment malfunction and property damage under specific conditions.
	Caution! Electric Shock Hazard The device contains AC and DC power terminals. Disconnect each power supply separately and wait for at least five minutes to ensure complete discharge of the rectifier controller.
	Caution! Fire Hazard The installation of this product is only suitable for concrete or other non-combustible materials. It is imperative to keep a safe distance from any flammable and explosive substances.
	PE Terminal The PE Terminal is used for protection and requires a secure grounding connection to ensure the safety of personnel.
	Electric Shock Hazard If there is a risk of electric shock from the capacitor, disconnect all power supplies and wait 5 minutes before removing the cover.

2 Safety

2.1 Notice for Use

The Enerstack314 installation and service personnel must undergo training to ensure their familiarity with the general safety regulations that need to be followed while working on electrical equipment. Additionally, they should also have knowledge of local regulations and safety requirements.

- Prior to usage, it is essential to thoroughly read this manual. Failure to adhere to the instructions provided in this manual may result in damage to the equipment, for which the Company reserves the right not to provide quality assurance.
- Only qualified electrical engineers are permitted to operate the Battery system.
- During operation, refrain from touching any other electrical components except for accessing operational information through the display screen.
- In case of an emergency, switch off the breaker on the BPU for immediate power cutoff of all functions of the whole battery cluster.
- All electrical procedures must comply with local standards.

2.2 Proper Installation

The proper installation of the Enerstack314 entails adhering to all instructions outlined in the user manual pertaining to equipment transportation, installation, electrical connection, and operation. ATESS shall not be held liable for any damages resulting from improper utilization of the equipment.

The Enerstack314 possesses an IP20 protection progress and is specifically designed for indoor installations.

Additionally, ensuring appropriate usage of the equipment necessitates attentiveness towards the following aspects:

- Adherence to safety instructions stated herein and below.
- Compliance with guidelines specified in the Enerstack314 user manual.
- Consideration of technical data associated with the equipment.

3 Battery Introduction

3.1 ENERSTACK Overview

Enerstack314 is a high-voltage battery storage system based on lithium iron phosphate batteries, and it is one of the new energy storage products developed and produced by ATESS. It can be used to support reliable power for various types of equipment and systems. Enerstack314 is especially suitable for application scenes of high power, limited installation space, restricted load-bearing and long cycle life.

3.2 Product Properties

The entire module is non-toxic, non-polluting and environmentally friendly.

Anode material is made from LiFePO_4 with safety performance and long cycle life.

The Battery Management System (BMS) comes with protective functions including over-discharge, over-charge, over-current and high/low temperature.

The system can automatically manage the charge and discharge state and balance the current and voltage of each cell.

Flexible configuration, multiple battery modules can be connected in series for expanding voltage and capacity.

0.5C discharge, built-in natural cooling system.

Each PACK has an independent fire extinguishing device.

The module has less self-consumption, up to 10~12 months without charging; no memory effect, excellent performance of shallow charge and discharge.

Working temperature range is from -20 to $+55^{\circ}\text{C}$, with excellent discharge performance and cycle life.

Small size and lightweight, standard module is easy to install and maintain.

3.3 Product Identity Definition

ATESS										
Stackable Battery System										
Model	BS241	BS225	BS208	BS192	BS176	BS160	BS144	BS128	BS112	BS96
Module Qty	15	14	13	12	11	10	9	8	7	6
Rated Voltage	768V	716.8V	665.6V	614.4V	563.2V	512V	460.8V	409.6V	358.4V	307.2V
Operating Voltage Range	672~864V	627.2~806.4V	582.4~748.8V	537.6~691.2V	492.8~633.6V	448~576V	403.2~518.4V	358.4~460.8V	313.6~403.2V	268.8~345.6V
Rated Capacity	314Ah									
Rated Energy	241kWh	225kWh	208kWh	192kWh	176kWh	160kWh	144kWh	128kWh	112kWh	96kWh
Nominal Charge/Discharge	157A (0.5C)									
Max Charge/Discharge	204A (0.65C)									
Ingress Protection	IP20									
Class of Equipment	CLASS 1									
BatteryType	Lithium Iron Phosphate									
Battery designation										
BS241: IFpP74/176/209/[(16S)15S]E/-20+60/95					BS160: IFpP74/176/209/[(16S)10S]E/-20+60/95					
BS225: IFpP74/176/209/[(16S)14S]E/-20+60/95					BS144: IFpP74/176/209/[(16S)9S]E/-20+60/95					
BS208: IFpP74/176/209/[(16S)13S]E/-20+60/95					BS128: IFpP74/176/209/[(16S)8S]E/-20+60/95					
BS192: IFpP74/176/209/[(16S)12S]E/-20+60/95					BS112: IFpP74/176/209/[(16S)7S]E/-20+60/95					
BS176: IFpP74/176/209/[(16S)11S]E/-20+60/95					BS96: IFpP74/176/209/[(16S)6S]E/-20+60/95					
Communication Port	CAN2.0B/RS485									
Operating Temp Range	1°C to 55°C(charge)									
	-20°C to 55°C(discharge)									
DATE OF MADE										
S/N										
 CAUTION Do not disassemble the battery Do not short-circuit the battery. The battery should be disposed by qualified recycling agent. Do not immerse the battery in water. Do not leave the battery near fire.										
	Emergency Situations									
If leaking, on fire, wet or damaged, switch off the DC Switch and move away from the battery. Do not touch any leaking liquid. Do not use water or sand Hot aerosol fire extinguisher should be used.										
 Shenzhen Ateess Power Technology Co., Ltd. www.ateesspower.com MADE IN CHINA										

Figure 3-1 Battery energy storage system nameplate

LiFePO4 Lithium-ion Battery	
Model type:	ESS-BM-51.2-314RPB-S
Date of manufacture:	
Rated capacity:	314Ah
Nominal voltage:	51.2V
Watt-hour:	16076.8Wh
Battery designation:	IFpP74/176/209/[(8S)2S]E/-20+60/95
Recommended Charge:	(157A) 0.5C charge to 57.6V CC-CV
Recommended Discharge:	(157A)0.5C discharge to 44.8V
Beware of fire hazard! Disposal acc. to local regulations!	
Shenzhen Ateess Power Technology Co., Ltd	Made in China

Figure 3-2 Battery module label

The primary external components of the RTF consist of an LED indicator, an LCD touch screen, and an emergency stop button.

	This battery meets European directive requirements.
	After the useful life of the battery, it can continue to be used after being recycled by a professional recycling organization.
	Do not dispose of the scrapped batteries with household waste; they must be recycled by professional personnel or institutes.
	Read the user manual before use.
	Inflammable.
	Battery voltage is higher than safe voltage, direct contact with electric shock hazard.
	Do not place near open flame or incinerate.
	If catch fire, do not put out with water.
	If catch fire, do not put out with dry powder fire.
	Do not cut or spear with sharp objects.

4 Product specifications

4.1 System Performance Parameter

Energy code	BS96	BS112	BS128	BS144	BS160	BS176	BS192	BS208	BS225	BS241
Module Number	6	7	8	9	10	11	12	13	14	15
Weight	733±20	851±20	969±20	1102±20	1220±20	1338±20	1456±20	1574±20	1692±20	1810±20
Dimension (W*D*H)mm	815±10/ 490±10/ 1670±10	815±10/ 490±10/ 1905±10	815±10/ 490±10/ 2140±10	815±10/ 1276±10/ 1335±10	815±10/ 1276±10/ 1435±10	815±10/ 1276±10/ 1570±10	815±10/ 1276±10/ 1670±10	815±10/ 1276±10/ 1805±10	815±10/ 1276±10/ 1905±10	815±10/ 1276±10/ 2040±10
Normal capacity	314	314	314	314	314	314	314	314	314	314
Normal Energy/kWh	96	112	128	144	160	176	192	208	225	241
Normal Voltage/V	307.2	358.4	409.6	460.8	512	563.2	614.4	665.6	716.8	768
Voltage Range/V	268~345.6	313.6~403.2	358.4~460.8	403.2~518.4	448~576	492.8~633.6	537.6~691.2	582.4~748.8	627.2~806.4	672~864
Recommended charge & discharge current	157A(0.5C)									
Depth of discharge	90%									
Cycle life	6000 cycles									
Charging temperature range	1°C~55°C									
Discharging temperature range	-20°C~55°C									
Communication	CAN/RS485									
Installation method	Stacked installation									
Cooling method	Smart air cooling									
Max. altitude	3000m									

Table 4-1 The parameter of the system

[1]Test conditions: 0.2C Charging/Discharging, @25°C, 95% DOD

4.2 Battery Module

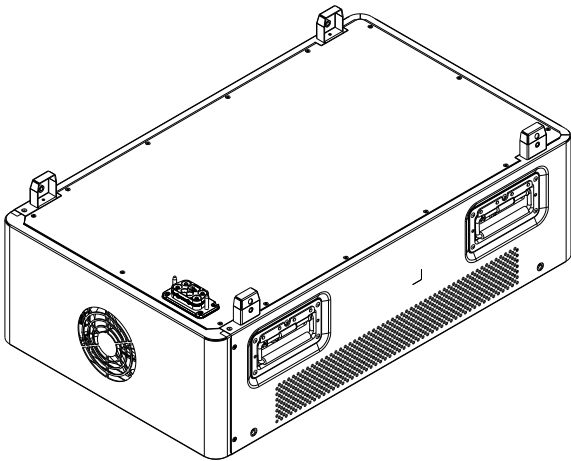


Figure 4-1 Battery Module

Model name	ESS-BM-51.2-314RPB-S
Cell technology	Li-ion (LFP)
Battery module capacity (kWh)	16.0768
Battery module voltage (Vd.c.)	51.2
Battery module capacity (Ah)	314
Number of battery module cells (pcs)	16
Battery cell capacity (Wh)	1004.8
Battery cell voltage (Vd.c.)	3.2
Battery cell capacity (Ah)	314
Dimensions (W*D*H)mm	815±5mm*490±5mm*282±5mm
Pollution degree (PD)	II
Weight (kg)	118±3%

Table 4-2 Battery parameters

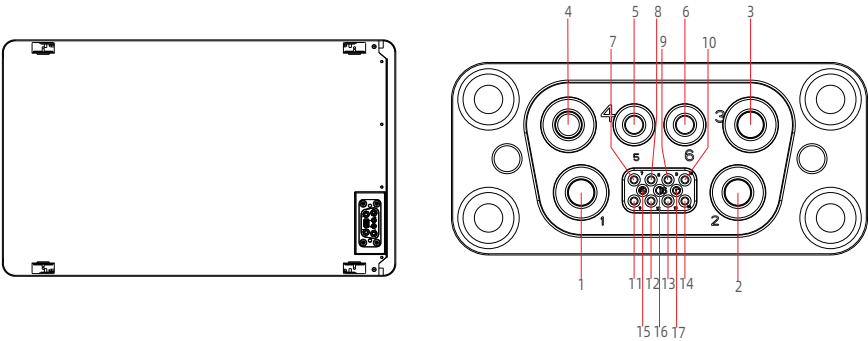


Figure 4-2 Bottom View of the Battery

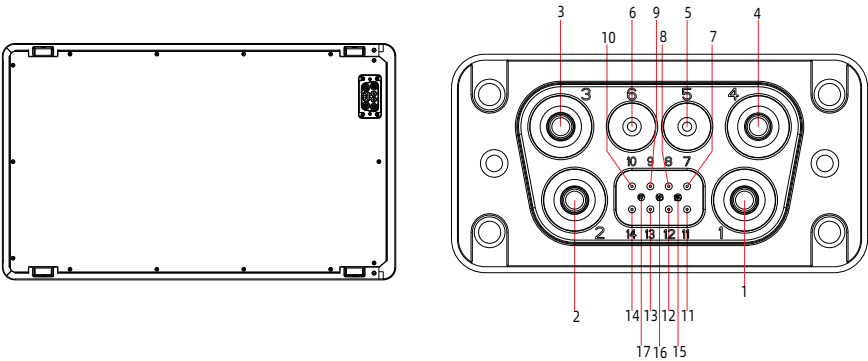


Figure 4-3 Top View of the Battery

PIN	Top Connector	Bottom Connector
1	NEGATIVE	POSITIVE
2	POSITIVE_BG*	POSITIVE_BG*
3	POSITIVE_BG*	POSITIVE_BG*
4	NEGATIVE	POSITIVE
5	PE	PE
6	/	/
7	CAN_H	CAN_H
8	CAN_L	CAN_L
9	CAN_GND	CAN_GND
10	/	/
11	/	/
12	ADD_TR	ADD_TR
13	ADD_DI	ADD_DO
14	24V-	24V-
15	24V-	24V-
16	24V+	24V+
17	24V+	24V+

POSITIVE_BG*: To bridge the positive wiring of the battery cluster.

Battery Controller

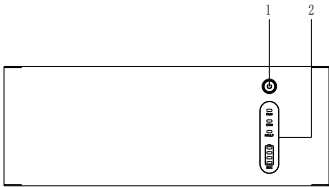


Figure 4-4 Front side interface

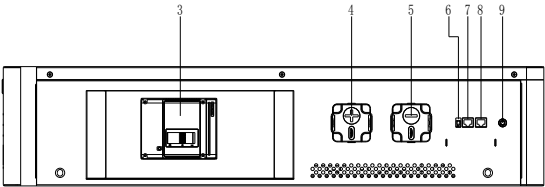


Figure 4-5 Right side interface

Item	Name	Definition
1	Dimensions(W*D*H,mm)	528*817*180
2	Weight(kg)	25
3	Output Voltage (Vdc)	864V
4	Maximum Output Current	204A

Table 4-4 BPU parameters

Item	Name	Definition
1	ON/OFF	Turn on the switch to power the BMS system.
2	Statu Indication	Build-out resistor.
3	Breaker	The master switch of the battery system, you must switch it on before switching on the Power on and Power WAKE switches; short circuit protection.
4	INV+	Connect battery system to inverter positive terminal.
5	INV-	Connect battery system to inverter negative terminal.
6	DIP SWITCH	1. CAN terminal resistor ; 2. 485-3 terminal resistor.
7	COM1	Parallel communication connection of multi cluster systems.
8	COM2	Parallel communication connection of multi cluster systems.
9	Grounding	The BPU must be grounded.

Table 4-5 Side interface definition

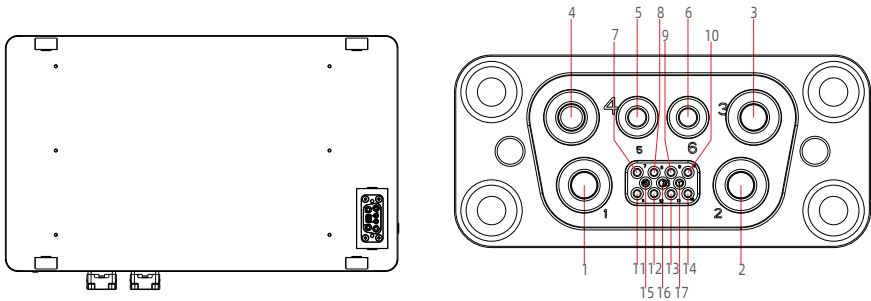


Figure 4-6 Bottom view of the BPU

Item	Definition	Item	Definition	Item	Definition	Item	Definition
1	BAT-	6	/	11	/	16	24V+
2	BAT+	7	CAN_H	12	/	17	24V+
3	BAT+	8	CAN_L	13	/		
4	BAT-	9	CAN_GND	14	24V-		
5	PE	10	/	15	24V-		

Table 4-6 Connector definition

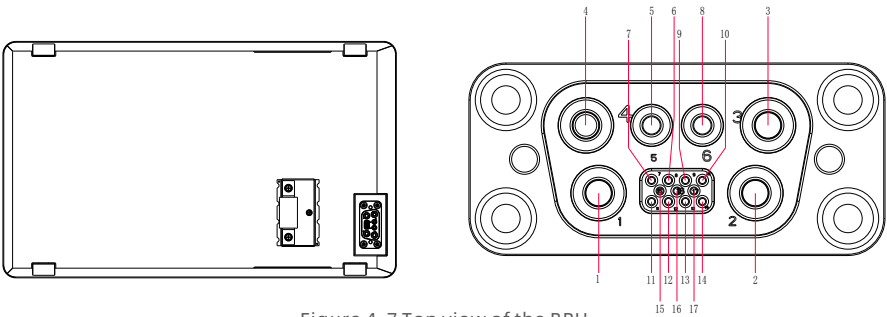


Figure 4-7 Top view of the BPU

Item	Definition	Item	Definition	Item	Definition	Item	Definition
1	NEGATIVE	6	/	11	/	16	24V+
2	NEGATIVE_BG*	7	CAN_H	12	ADD_TR	17	24V+
3	NEGATIVE_BG*	8	CAN_L	13	ADD_TR		
4	NEGATIVE	9	CAN_GND	14	24V-		
5	PE	10	/	15	24V-		

Table 4-7 Connector definition



DANGER!
DO NOT switch off the ON/OFF switch during normal operation, only in emergencies. Otherwise it will cause the battery current to surge.



CAUTION!
If the DC breaker trips because of over-current or short circuit, you must wait for 30 minutes to switch it on again, otherwise it may cause damage to the breaker.

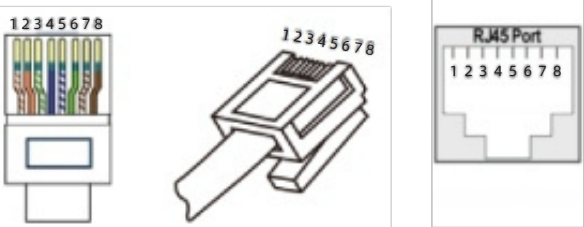


Figure 4-8 "Inverter CAN/RS485" port pins Table

PIN	Color	Definition
1	Orange-white	RS485_1_A To host computer/Screen
2	Orange	RS485_1_B To host computer/Screen
3	Green-white	CAN2_H Spare
4	Blue	CAN2_H Spare
5	Blue-white	RS485_3_B Monitoring

PIN	Color	Definition	
6	Green	RS485_3_A	Monitoring
7	Brownish-white	RS485_2_A	BCU to BCU/inverter
8	Brownish	RS485_2_B	BCU to BCU/inverter

4.3 Environmental Requirements

DANGER!

Cleanliness

The battery system has high voltage connectors. The environmental conditions will affect the isolation of the system.

Before installation and switch-on, dust and swarf must be removed to keep the system clean. The environment must be dust-proof to a certain extent.

Dust and humidity must be regularly checked during continuous operation of the system.

Fire Protection System



The room must be equipped with a fire protection system or fire extinguishers (Recommended: foam extinguisher). The fire protection system needs to be regularly checked to ensure its normal condition. Please refer to your local fire protection equipment for use and maintenance requirements.

Grounding System

Make sure that the grounding point for the battery system is stable and reliable before installation. If the battery system is installed in an independent equipment cabin (e. g. container), ensure that the grounding of the cabin is stable and reliable.

The resistance of the grounding system must be $\leq 1\Omega$.

CAUTION!

Temperature



Enerstack314 system working temperature range: -20°C – 55°C ; Optimum temperature: 10°C to 35°C ; Exceeding the working temperature range will cause over-temperature/under-temperature alarms or protection of the battery system which may lead to the reduction of cycle lives.

Cooling System

It is essential to equip a cooling system to keep the battery system in a relevant temperature range. Over- temperature/under- temperature alarms or protection of the battery system may lead to the reduction of lifespan.

4.4 Installation location precautions



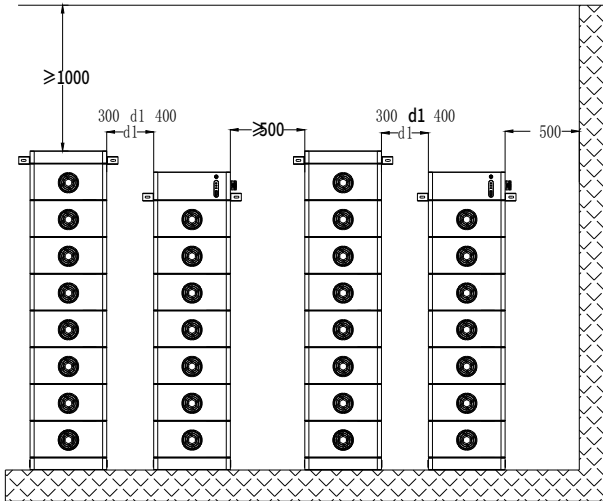
DANGER!

Please note that the battery should be installed with a minimum safe clearance from the surrounding equipment or battery. Please refer to the minimum clearance diagram below.

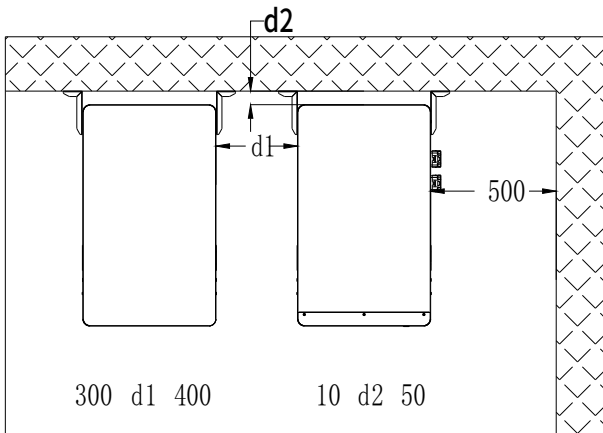
● Installation Clearance

To meet operational and heat dissipation requirements:

- Spacing between two columns within the same cluster: $300 \text{ mm} \leq d1 \leq 600 \text{ mm}$.
- The distance from the high-voltage box terminal side to the wall or an adjacent battery cluster must be $\geq 500 \text{ mm}$.



- The distance from the high-voltage box terminal side to the wall or an adjacent battery cluster must be $\geq 500 \text{ mm}$.



● Installation Location

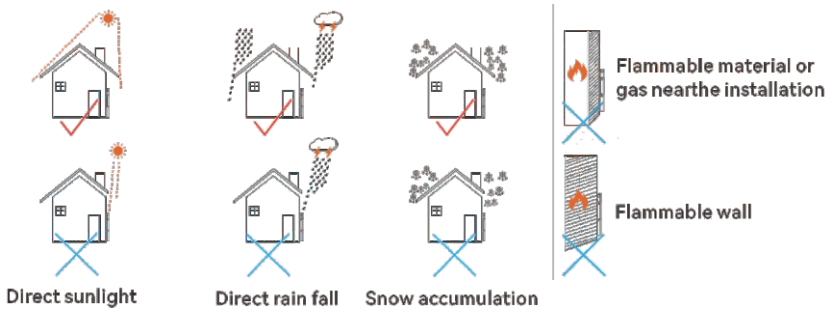


Figure 4-9 Suggested installation location

● Tools:

The following tools are required to install the battery pack:



Crimping tool



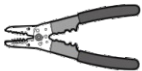
Pen



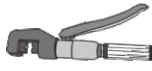
Phillips screwdriver



Flat screwdriver



Wire stripper



Hydraulic crimping tool



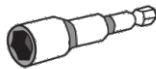
Wrench



Tape measure



Hair dryer



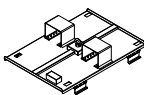
Socket Wrench



Torque Wrench



Drilling Machine



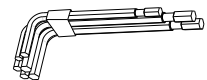
Lifting gear



Manual forklift



Cran



Allen Wrench

● Safety Requirement

We recommend wearing the following safety gear when working with batteries.



Insulated gloves



Safety goggles



Safety shoes

Figure 4-10 Safety gear

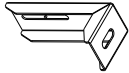
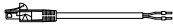
CAUTION!

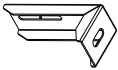
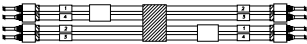
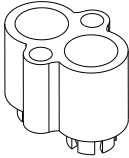


1. The system should be installed with the help of at least 2 grown-up males.
2. If more than 8 of the battery to be configured, It is suggested to divide into two columns.
3. The battery system should be installed indoors, away from flammable and explosive materials.

4.5 Unpacking inspection

- When the equipment arrives at the installation site, unloading should be performed according to rules and regulations, to prevent from being exposed to direct sunlight. The battery should not be installed in direct sunlight. Please refer to Section 3.2.
- Before unpacking, the total number of packages shall be indicated according to the shipping list attached to each package, and all packages shall be checked for good condition.
- Handle with care and protect the surface coating of the goods.
- Upon opening the package, the installation personnel should read the technical documentation, verify the list according to configuration table and packing list and ensure that the goods are complete and intact. If the internal packing is damaged, goods should be examined and recorded in detail.

Name	Specification	Quantity	Image
Package A			
BPU	528*817*180(W*D*H)	1	
Fixing bracket	To secure with the wall	2	
Expansion Bolt	M8*80	3	
Parallel communication cable	L2000mm, RJ45 Plug at both sides, PIN1&2&5&6&7&8	1	
Communication cable from BPU to inverter	L5000mm, RJ45 plug at both side, PIN 1&2&5&6&7&8	1	
Flat head Phillips screws	M6*16	5	
USB to Universal serial cable	Convert USB to RS232 or RS485/422	1	
RS485 cable	From inverter to silk screen/host computer	1	
Package B			
ESS-BM-51.2-314RPB-S	490*815*282(W*D*H)	1	
Flat head Phillips screws	/	5	
Package C			
Expansion Base	490*815*127(W*D*H)	1	
Flat head Phillips screws	M6*16	5	

Name	Specification	Quantity	Image
Package D			
TC314-S	490*815*80(W*D*H)	1	
Fixing bracket	To secure with the wall	2	
Expansion Bolt	M8*80	3	
Series power cable	Power cables between the two columns of the battery cluster.	1	
Series communication cable	Communication cables between the two columns of the battery cluster.	1	
Power cable terminal fixing clip	To secure the terminals of the power cables between the two rows of battery clusters to the composite connector.	6	
self-tapping screw	PT3*8	4	
Flat head Phillips screws	M6*16	5	

Model	Battery System Capacity(kWh)	Configuration	Dimension (mm)	Weight (KG)
BS96	96.45	A+6B+C	490*815*1670	733
BS112	112.53	A+7B+C	490*815*1905	851
BS128	128.60	A+8B+C	490*815*2140	969
BS144	144.68	A+9B+2C+D	1276*815*1335	1102
BS160	160.76	A+10B+2C+D	1276*815*1435	1220
BS176	176.83	A+11B+2C+D	1276*815*1570	1338
BS192	192.91	A+12B+2C+D	1276*815*1670	1456
BS208	208.98	A+13B+2C+D	1276*815*1805	1574
BS225	225.06	A+14B+2C+D	1276*815*1905	1692
BS241	241.14	A+15B+2C+D	1276*815*2040	1810

Table 4-9-1 Packing list

4.6 Equipment installation

CAUTION!



1.If more than 8 battery modules are to be installed,you are advised to install them in two columns.

2.One battery column (8 Battery + 1 BPU&Base) is about 2140 mm in height. Please maintain a clearance of 300mm above the BPU. Namely, ensure that the distance between the floor and the ceiling is greater than 2640 mm for the

convenience of installation and better heat dissipation . If the height is not enough,you are advised to install them in two columns.

3.The system should be installed with the help of at least 2 grown-up males.

4.If the use of a conduit is required, please install the bushing to the reserved hole before installing the expansion screw.

Installation Preparation

- Make sure that the environment meets all technical requirements.
- Prepare equipment and tools for installation.
- Confirm that the DC breaker is in the OFF position.

DANGER!



The battery system is a high-voltage DC system. Ensure that installation area of Enerstack314 is stable and reliable.

Please confirm that the battery system is switched off before connecting. Electric shock and damage to the inverter may be caused if the battery is connected directly without being switched off.

Otherwise, the system cannot work properly. The voltage of the battery is too high, please pay attention to self-protection during measurement.

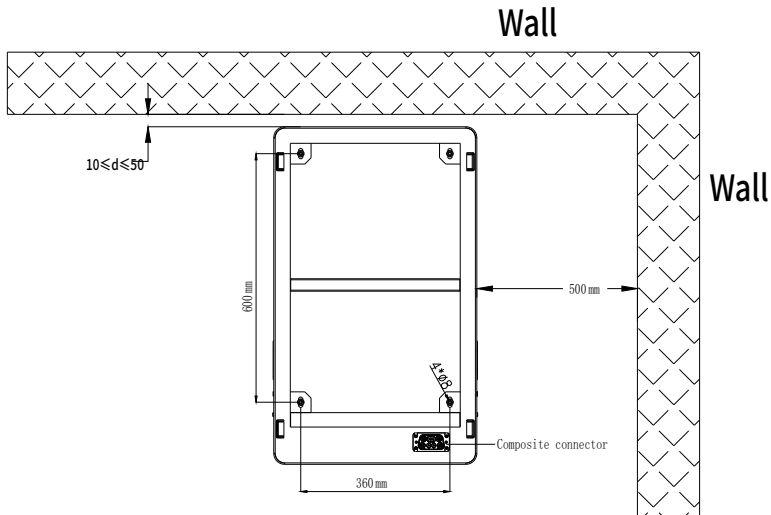
Mechanical Installation

The Enerstack314 series battery clusters contain 6 to 15 modules. The maximum pack quantity of each column shouldn't be larger than 8. That's to say, if the pack number is within 8, you can install them into one or two columns. If the pack quantity is larger than 8, we must install them into two columns. The standard basement is designed for single-column installation scenario. For two-column installation, it is necessary to do more than cable connection changing about the basement. The following sections detail the steps for single-column and double-column installation.

Single-column cluster installation

Step1: installed the basement (BS314-S)

a. According to the spacing requirements mentioned earlier, place the base in the appropriate position (the end with the black composite connector facing outward), and use a marker to mark the fixed hole position on the ground, as shown in the figure below:

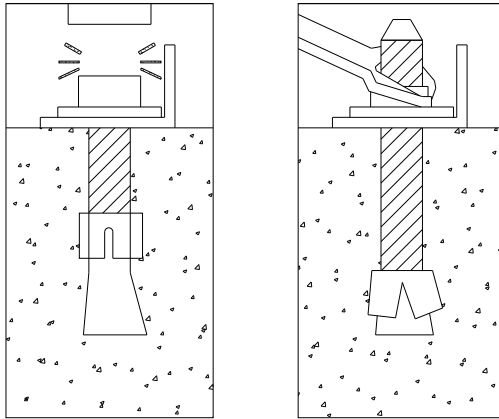


Mark the positions of the screw holes

b. Drill at the marked position, with a drill bit outer diameter of D8MM and a depth of 90mm.

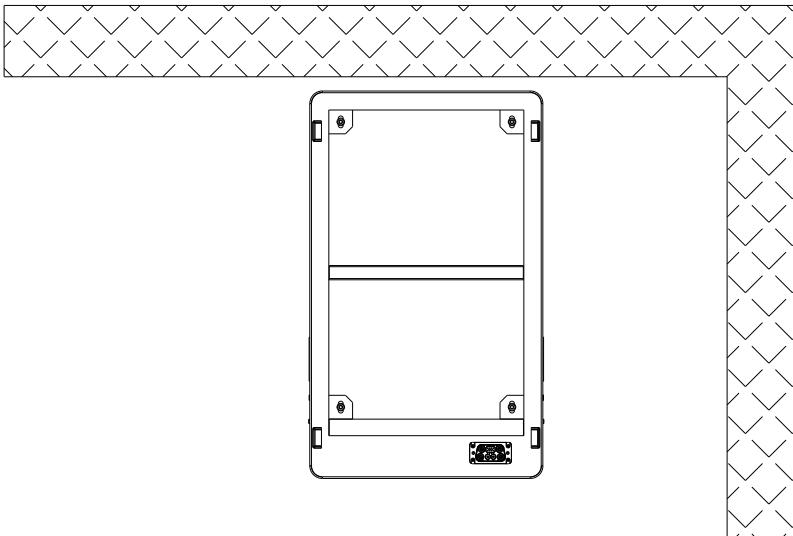


c. Drive the expansion screw into the hole (M8×80); Screw down the M8 nut and washer.



Install expansion bolts

d. Place the base on the bolt, then tighten the M8 nut to secure the base; The fixed base is shown in the picture.

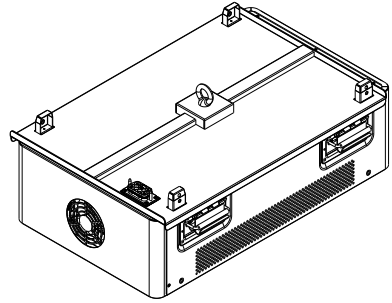


Fixed image for a single basement

Step 2: Install the battery pack.



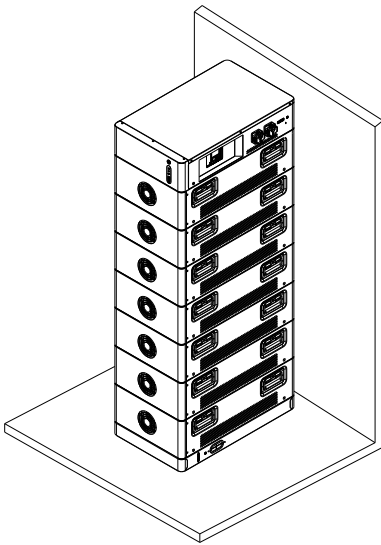
Crane



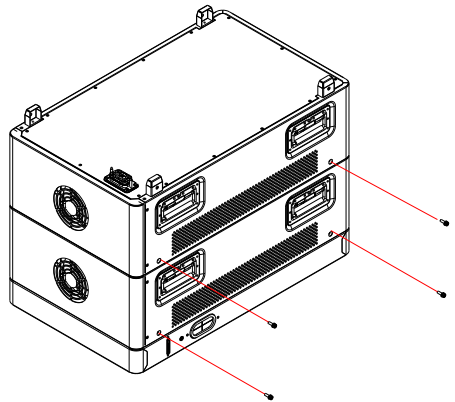
Lifting equipment + PACK

Step 3: Install other packs and BPU

Repeat Step 2: install the other pack and the BPU in sequence, and use the included M6*16 bolts to secure the top and bottom modules (or BPU).



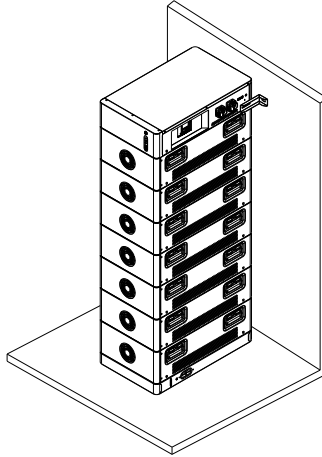
Fixed upper and lower packs



Install the modules and BPU

Step 4: Install the fixing ears

Use fixing ears and M8*80 expansion bolts to secure the battery cluster against the wall.



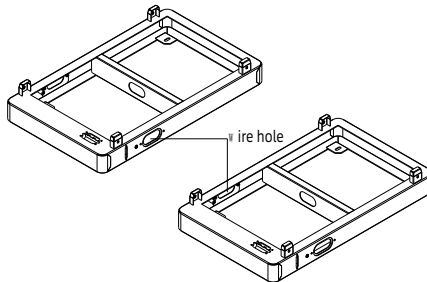
Install the fixing ears

Double-columns cluster installation

When the pack quantity of cluster exceeds 8, the cluster must be divided into 2 columns for installation, with a maximum of 8 modules per column. For double-row installation, two bases are required. The two bases are connected by series cables, and both bases need to be modified.

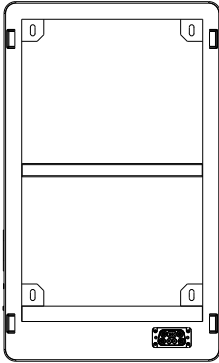
Step 1: Base cable modification

Use a screwdriver to unscrew the protective coil covers of the two bases.

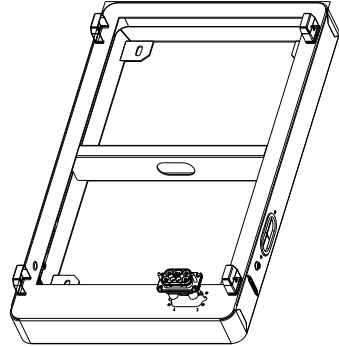


Remove the cable protector on the side of the base

b. Use a screwdriver to remove the two composite connectors of the base, as shown in the figure below.

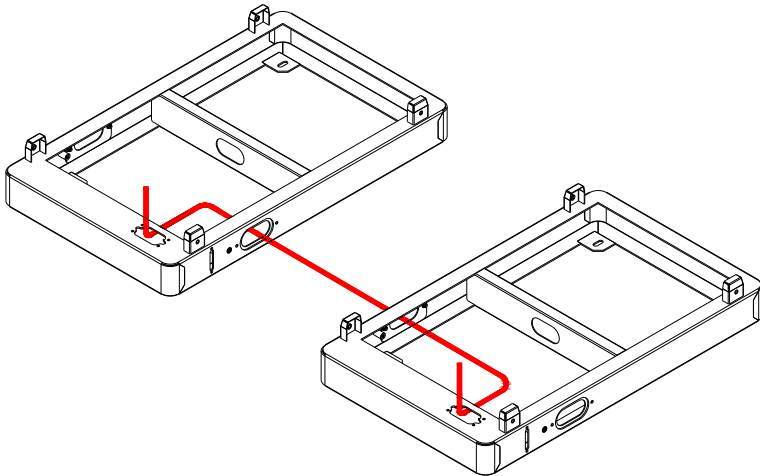


Base with composite connector



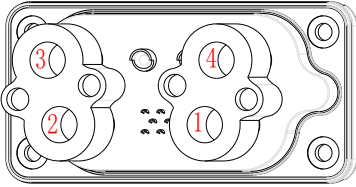
Remove the composite connector

c. Thread the series cable sequentially through the cable entry holes on the side of the base and the mounting holes of the composite connectors.



Serial cable threaded into 2 bases

d. Use a screwdriver to unscrew the main wire post fixing screws of the composite connector, then pull out the main wire post.

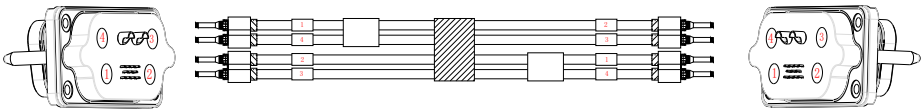


Rear view of the composite connector



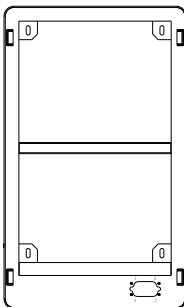
Disassemble the composite connector

e. Insert the terminal of the series cable that passes through the base into the composite connector. (Note: The wire number of the series cable must match the wire number on the front of the composite connector; otherwise, it will cause a short circuit.)) Then tighten it with screws.

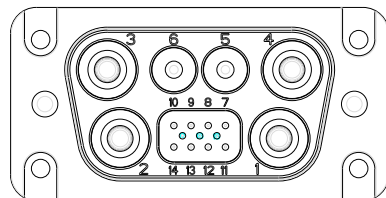


Series cables and disassembled composite connectors

f. Fix the assembled wire composite connector to the base with screws. Note that the wire number on the front of the composite connector must match the number marked on the base; otherwise, it will not match the composite connector at the bottom of the battery pack and cause damage on the battery pack composite connector.



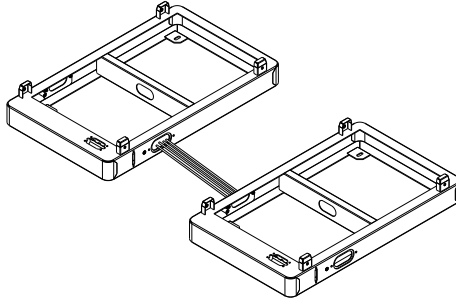
Base without composite connector



Front view of the base composite connector

Step 2: Install two bases

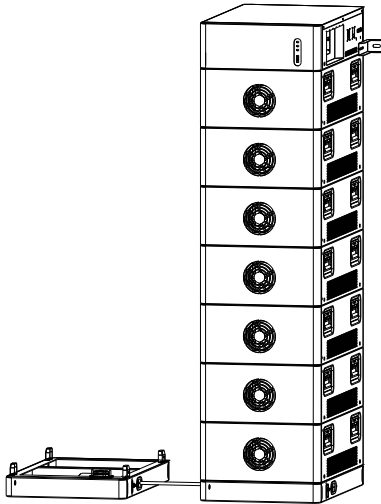
After the base modification is completed, refer to the installation instructions for single-column base and the previously mentioned spacing requirements for the two columns to fix both bases to the ground.



Fix two bases

Step 3: Install the first column of batteries

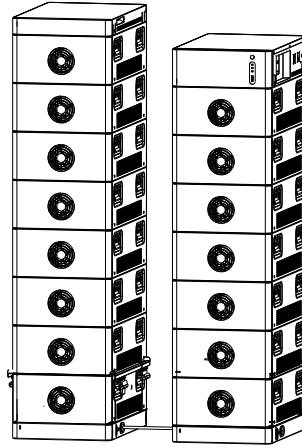
Refer to the single-column installation steps to install the first row of batteries and the high-voltage box.



Installation of the first column batteries

Step 4: Install the second row of batteries

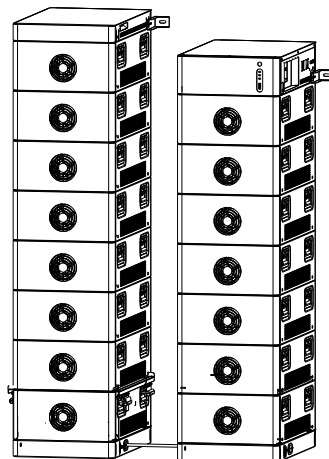
Refer to the single-column installation steps to install the second column of batteries and the top cover.



Installation of the second column batteries

Step 5: Install the fixing ears.

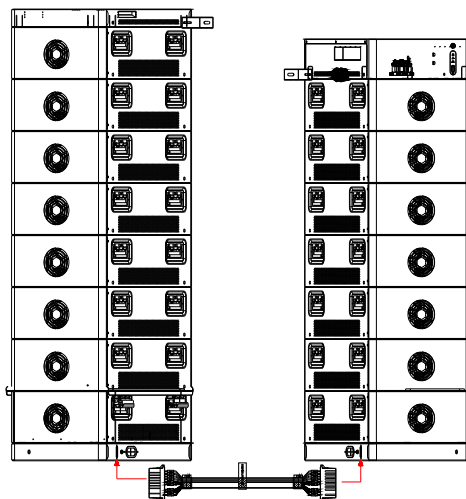
Use fixing ears and M8*80 expansion bolts to secure the battery cluster against the wall.



Installation of the fixing ears

Step 6: Connect the communication cable between the two columns

Insert the communication cable connected in series between the two columns into the communication ports of the two bases.



Installation of communication cable



CAUTION!

Please strictly follow the installation direction of the positive and negative poles as shown in the diagram, otherwise it may cause a short circuit in the battery.



CAUTION!

The positive and negative screws need to be tightened. Otherwise, poor contact may lead to heating and trigger a fire.



CAUTION!

The color of the cable plug should be consistent with the socket. Otherwise, it may cause a short circuit in the battery.

Battery system self-test

- Switch on the DC breaker of the BPU.

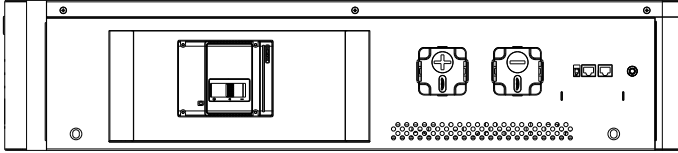


Figure 4-22

- Press the “ON/OFF” button to turn on the BPU. When the power indicator light turns on..., it means the BPU has been turn on.

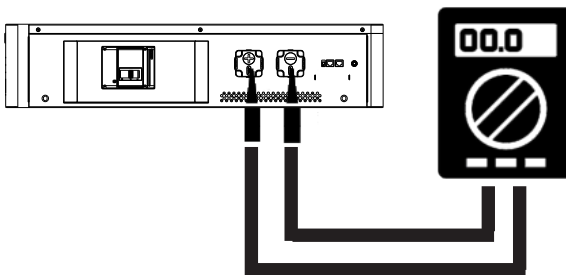


- Check the system output voltage.

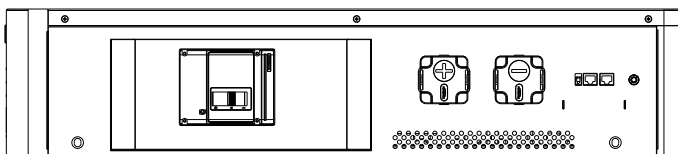
Use a multi-meter to measure the output voltage on the positive and negative ports of the BPU.

The output voltage should conform to the voltage range in the table “Figure 3-1 Battery energy storage system nameplate” .

- Turn the POWER ON knob to OFF, battery shutdown.



- Switch the BPU DC BREAKER to OFF position.



Connecting inverter

- Connect the power cable to the BPU.

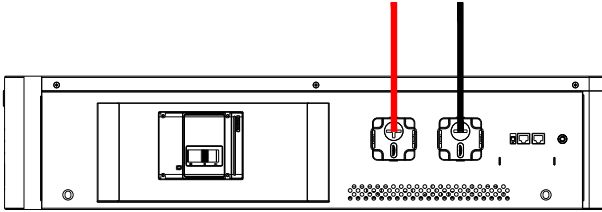


Figure 4-25

- Connect the power cable to the inverter.

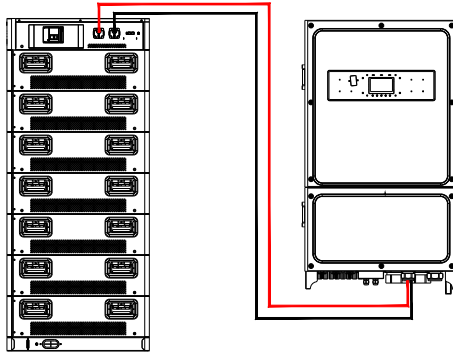


Figure 4-26

- Connect the communication cable between inverter and battery.

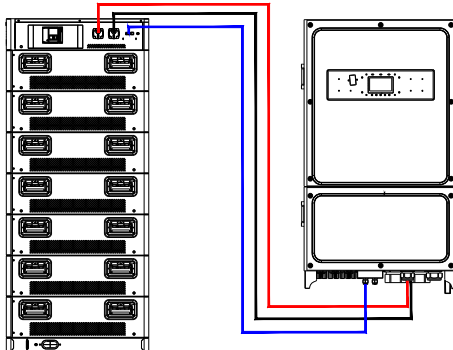


Figure 4-27

Installation of grounding wire

- Grounding After the system installation is completed. There is a touch down point at the top of the BPU, as shown in the figure below.

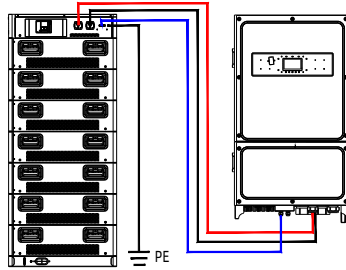


Figure 4-28

Parallel system

- The parallel connection of the Enerstack314 series and all other related work are only allowed by professional and qualified electricians.

The total voltage difference between clusters is less than 10V; SOC of each cluster should be 100% and time interval between newly added cluster and existing cluster should be less than 3 years.

Maximum 15 Enerstack314 clusters are allowed to be connected in parallel. For parallel operation, the communication cable can only be used with the CAN cable lable.

The general configuration diagram of the Enerstack314 in parallel connection is as under.

Take three clusters for example.

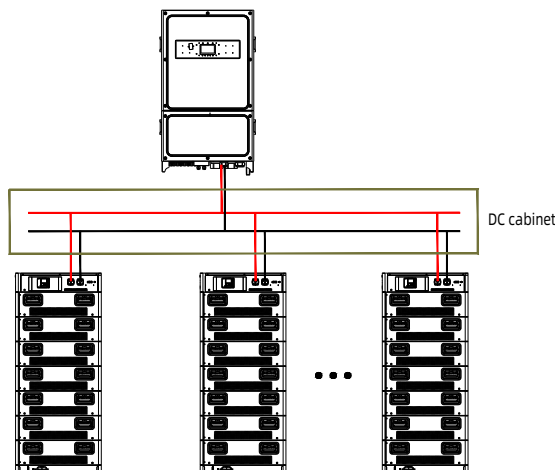


Figure 4-29

Communication cable connection between Enerstack314 and Inverter

● For multi cluster parallel systems, the communication line connection between clusters is Host’s Parallel OUT to the second cluster’s(Slave) Parallel IN and so on.Then connect a 120 Ω CAN resistor to the port of the host parallel IN.Ensure the stability of CAN communication.

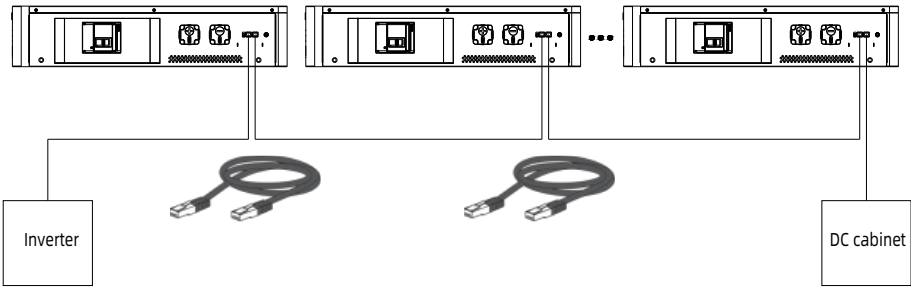


Figure 4-30

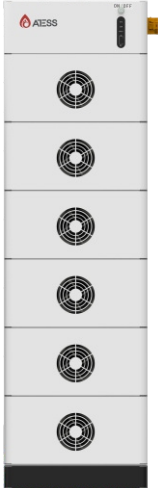
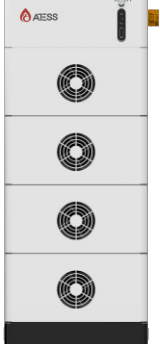
CAUTION!
Choose the correct communication cable.

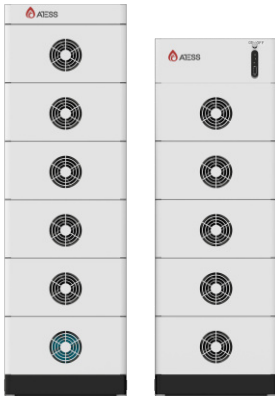
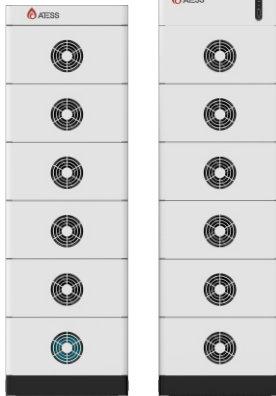
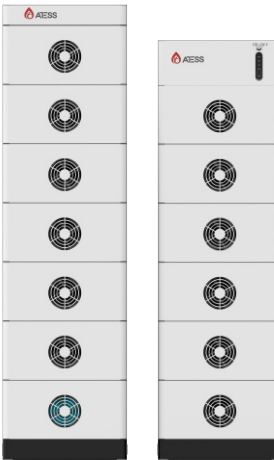
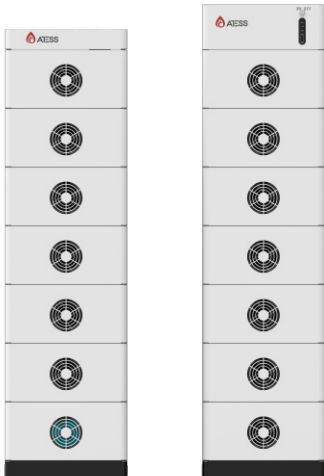
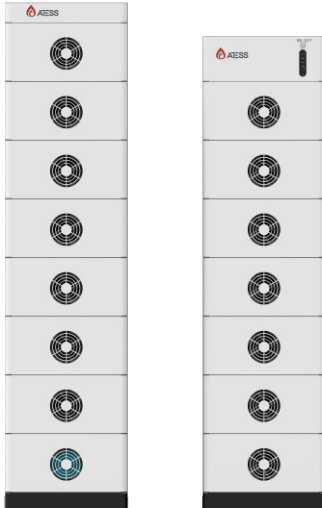


PIN	Color
1	Orange-white
2	Orange
3	Green-white
4	Blue
5	Blue-white
6	Green
7	Brown-white
8	Brown

PIN	Color
1	Orange-white
2	Orange
3	Green-white
4	Blue
5	Blue-white
6	Green
7	Brown-white
8	Brown

4.7 Battery Capacity Description

 BS96—96.45KWh	 BS112—112.53KWh	 BS128—128.60KWh
  BS144—144.68KWh	  BS160—160.6KWh	

 BS176—176.83KWh	 BS192—192.91KWh	 BS208—208.98KWh
 BS225—225.06KWh	 BS241—241.14KWh	

5 View and configure battery parameters

5.1 Introduction

There are two ways to view and configure battery parameters:

Method 1: Use the battery's dedicated PC software and communication cable to view and configure parameters on a computer.

Method 2: Use the battery's communication cable to connect to the DC cabinet's display screen to view and configure parameters. (Note: This method is not supported if the system does not include a DC cabinet.)

The two methods mentioned above are described in detail below.

5.2 View and configure battery parameters via host computer

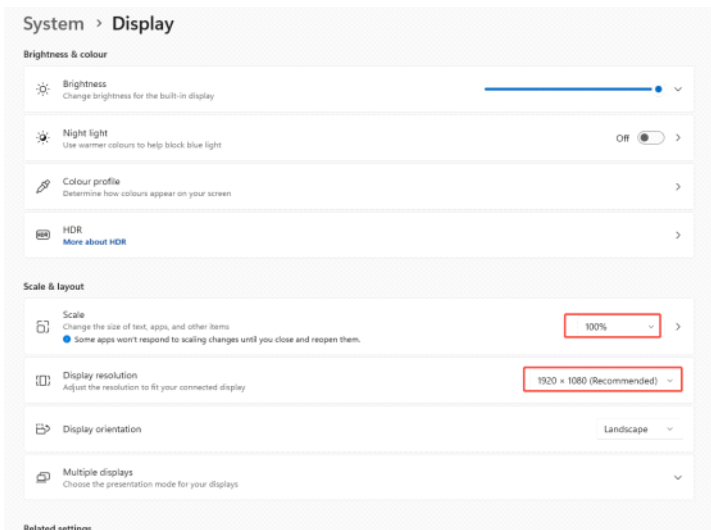
5.2.1 Required tools

- Host computer software (download from official website or via QR)
- 485 serial port cable
- 485 communication cable
- computer

5.2.2 Operating Steps

- Configure computer settings

Choose 100% for computer layout size; choose 1920*1080 for display resolution;

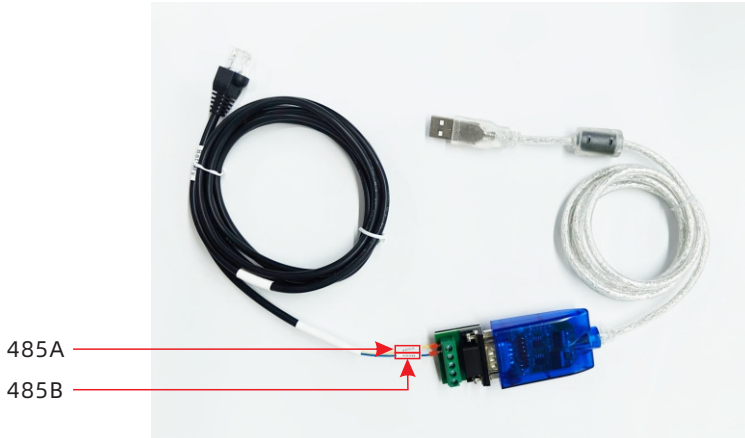


● Wiring between host computer and battery

Connect RJ45 terminal the black communication cable to the COM1 or COM2 of the battery BPU.

Connect 485A (yellow wire) to the T/R+ terminal of the 485 serial port cable, connect 485B (blue wire) to the T/R- terminal of serial port cable.

Connect USB terminal of 485 serial port cable to the computer.



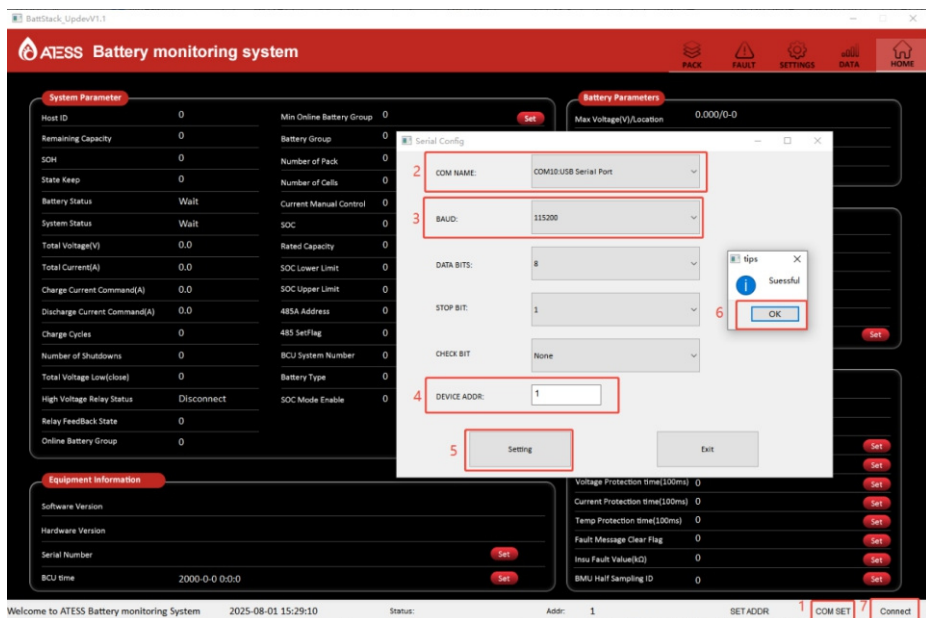
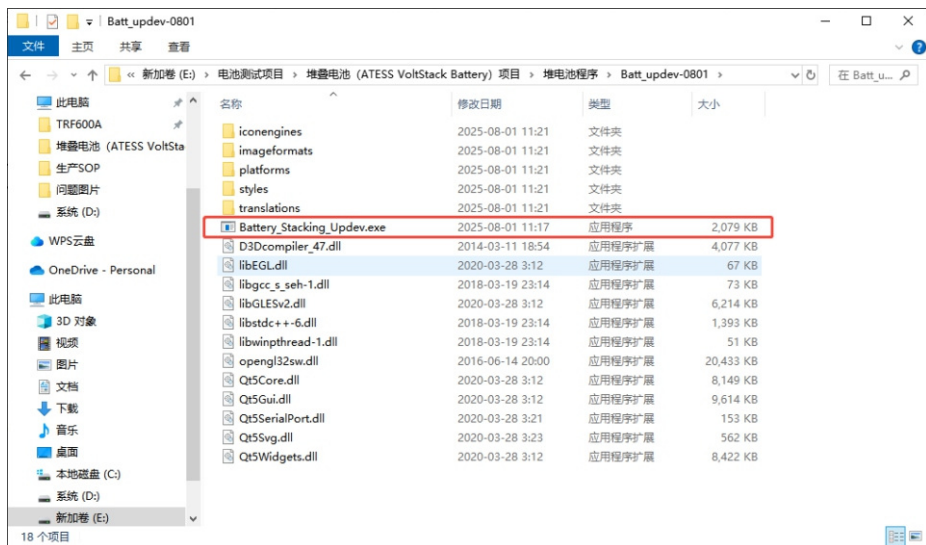
● Unzip the host computer compression package



Batt_updev-260
608.zip

● Open the host computer, click

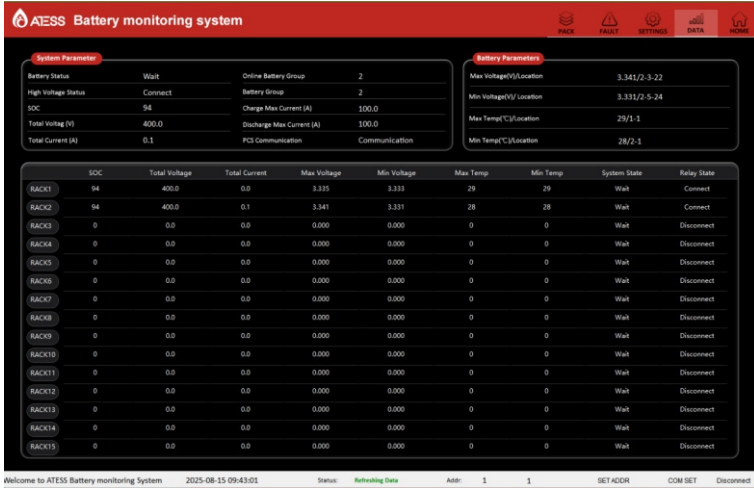
- COM SET to enter.
- Select the corresponding port (this computer - management - set manager - port).
- Select 115200 serial port baud rate.
- Select the BCU address to be viewed.
- Click set, a prompt will appear.
- Click OK, and finally click.
- Connect. The page shows that the connection is successful.



5.2.3 Parameter viewing and setting

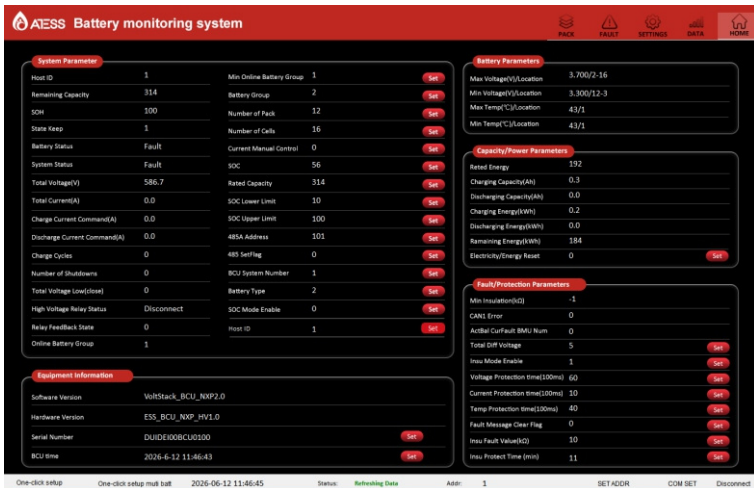
● DATA

The host device (default BCU address 1) has data, and the DATA page parameter is used to view system battery data information.



● HOME

The host device (default BCU address 1) has data, and the DATA page parameter is used to view system battery data information.



● System Parameter

No.	Data Name	Value	Modify Ranges
1	Host ID	(View based on actual battery group)	1~15
2	Remaining Capacity	50(Rated capacity * SOC * 0.01)	-
3	SOH	100(The state of health of the battery)	-
4	State Keep	0	-
5	Battery Status	0:Wait; 1:Fault; 2:ForbidCharge; 3:ForbidDischarge; 4:Charging; 5: Discharging	-
6	System Status	0:Wait; 1:Charging; 2:Discharging; 3:Fault;	-
7	Total Voltage (V)	-(Total Voltage of the battery)	-
8	Total Current (A)	-(Total Current of the battery)	-
9	Charge Current Command (A)	-(Total Voltage of the battery)	-
10	Discharge Current Command (A)	-(Total Current of the battery)	-
11	Charge Cycles	50(Maximum charging current limit of the battery Cluster)	-
12	Number of Shutdowns	50(Maximum discharge current limit of battery cluster)	-
13	Total Voltage Low(close)	-	-
14	High Voltage Relay Status	0(Cumulative shutdown times due to level 3 or above faults)	-
15	Relay FeedBack State	0	-
16	Online Battery Group	1(Relay status (connect, disconnect))	-
17	Min Online Battery Group	-	1~15
18	Battery Group	-(The number of battery clusters operating normally in the system)	1~15
19	Number of Pack	-(Minimum number of battery clusters required for normal operation of the system)	1~15
20	Number of Cells	-(The total number of battery clusters in the system)	1~16

No.	Data Name	Value	Modify Ranges
21	Current Manual Control	0 (manually modify the charging demand current, the maximum charging current no longer checks the charging current table).	0~310
22	SOC	50	0~100
23	Rated Capacity	100(Battery type related data verification)	0~100
24	SOC Lower Limit	10(Discharge SOC lower limit parameter)	0~20
25	SOC Upper Limit	100(charging SOC upper limit parameter)	90~100
26	485A Address	101 (Automatically set according to BCU address and system number)	1~200
27	485 SetFlag	0	0~1
28	BCU System Number	The BCU system numbers for the same system must be the same; however, the system numbers for different battery systems under the same collector cannot be the same. For example: Battery System 1 (all BCU systems are numbered as 1).	1~30
29	Battery Type	0:100AH 1C 1:100AH 0.5C 2:314AH 0.5C	0~2
30	SOC Mode Enable	0 (0: SOC is calculated based on the number of charge and discharge cycles 1: SOC is determined based on the actual charge and discharge capacity).	0~1

● Battery Parameter

No.	Data Name	Value	Modify Ranges
1	Max Temp / Location	-(Location: Max Temp. PACK Num)	-
2	Min Temp / Location	-(Location: Min Temp. PACK Num)	-
3	Max Voltage / Location	-(Location: Max Voltage PACK Num-Cell Num)	-
4	Max Voltage / Location	-(Location: Min Voltage PACK Num-Cell Num)	-

● Capacity \ Power Parameters

No.	Data Name	Value	Modify Ranges
1	Rated Energy	56	-
2	Charging Capacity (KWH)	0(Total charging capacity of battery cluster)	-
3	Discharging Capacity (KWH)	0(Total discharge capacity of battery cluster)	-
4	Charging Energy (KWH)	0(Total charging Energy of battery cluster)	-
5	Discharging Energy (KWH)	0(Total discharge Energy of battery cluster)	-
6	Remaining Energy (KWH)	0(Remaining Energy of battery cluster)	-
7	Electricity/Energy Reset	0(0: charge and discharge capacity is not cleared to 0;1: charge and discharge capacity is cleared to 0)	0~1

● Fault / Protection Parameters

No.	Data Name	Value	Modify Ranges
1	Min Insulation (KΩ)	-The insulation value of the system operation. This value must be observed to trigger an insulation fault. It cannot be -1 (-1 means that the insulation module is not connected).	-
2	CAN1 Error	00 (If a communication failure between BMU and BCU is reported, this parameter needs to be checked. The value indicates that the communication with the BMU address has timed out.)	-
3	ActBal CurFault BMU Num	0	-
4	Total Diff Voltage	5(Total pressure difference fault value of multiple parallel battery packs).	0~10
5	Insu Mode Enable	1(0:Insulation faults are detected according to normal logic. 1:Insulation faults are detected based on the inverter status and communication status).	0~1
6	Voltage Protection time (100ms)	20(voltage fault duration judgment time)	-
7	Current Protection time (100ms)	10(Current fault duration judgment time)	-
8	Temp Protection time (100ms)	40(temperature fault duration judgment time)	-
9	Fault Message Clear Flag	0	0~10
10	Insu Fault Value (KΩ)	10 (minimum insulation value less than this parameter will trigger insulation fault).	0~1
11	Insu Protect Time(min)	11(Insulation fault protection time)	-

● Equipment Information

No.	Data Name	Value	Modify Ranges
1	Serial Number	-(BCU serial number)	'0'~'9'; 'A'~'Z' 'a'~'z'
2	Hardware Version	-(BCU Hardware number)	'0'~'9'; 'A'~'Z'
3	Software Version	-(BCU Software number)	'0'~'9'; 'A'~'Z' 'a'~'z'
4	BCU Time	-(BCU Time)	Year:2025~2099 Month:1~12 Day:1~31 Hour:0~23 Minute:0~59 Second:0~59

● Settings

ATESS Battery monitoring system

BACK
FAULT
SETTINGS
DATA
HOME

Voltage

Cell Voltage High 3 (V)	3.660	Set	Cell Voltage Diff High 3 (V)	0.400	Set	Volt Ratio	1.000	Set
Cell Voltage High 2 (V)	3.610	Set	Cell Voltage Diff High 2 (V)	0.400	Set	Cell Voltage Recovery (V)	0.200	Set
Cell Voltage High 1 (V)	3.590	Set	Cell Voltage Diff High 1 (V)	0.300	Set	Cell Volt Diff Recovery (V)	0.200	Set
Cell Voltage Low 3 (V)	2.600	Set	Full Charge Voltage (V)	3.500	Set	Balance Mode	0	Set
Cell Voltage Low 2 (V)	2.900	Set	Nominal Voltage (V)	3.200	Set			
Cell Voltage Low 1 (V)	3.000	Set	Full Discharge Voltage (V)	3.000	Set			

Current

Current Sensor Model (A)	300	Set	Discharge Start Current (A)	-3.0	Set	Charge Calibrate 1	1.0	Set
Charge Max Current (A)	157.0	Set	Start Current Deviation (A)	2.0	Set	Charge Calibrate 2	1.0	Set
Discharge Max Current (A)	-204.1	Set	Discharge Current High 3 (A)	-219.1	Set	Discharge Calibrate 1	1.0	Set
Discharge Current High 3 (A)	172.0	Set	Discharge Current High 2 (A)	-214.1	Set	Discharge Calibrate 2	1.0	Set
Discharge Current High 2 (A)	167.0	Set	Discharge Current High 1 (A)	-209.1	Set	Total Current (A)	0.0	Set
Discharge Current High 1 (A)	162.0	Set	Current Calibrate Enable	0	Set			
Charge Start Current (A)	3.0	Set	Min Current of SOC Calculate (A)	0.30	Set			

Temperature

Temp Diff Max 3 (°C)	20	Set	Charge Temp. Low 3 (°C)	-10	Set	Discharge Temp. Low 3 (°C)	-20	Set
Temp Diff Max 2 (°C)	15	Set	Charge Temp. Low 2 (°C)	-5	Set	Discharge Temp. Low 2 (°C)	-15	Set
Temp Diff Max 1 (°C)	12	Set	Charge Temp. Low 1 (°C)	0	Set	Discharge Temp. Low 1 (°C)	-5	Set
Charge Temp. High 3 (°C)	55	Set	Discharge Temp. High 3 (°C)	55	Set			
Charge Temp. High 2 (°C)	50	Set	Discharge Temp. High 2 (°C)	53	Set			
Charge Temp. High 1 (°C)	45	Set	Discharge Temp. High 1 (°C)	50	Set			

Network Information

Network Connection Status	Disconnect	Server Port	5279	Set	CC	Set
Firmware Version	1234	WiFi Account		Set	4G Serial Number	Set
Server Address	47.57.139.213	WiFi Password		Set		

One-click setup
One-click setup multi batt
2026-06-12 11:49:14
Status: Refreshing Data
Addr: 1
SET ADDR
COM SET
Disconnect

Voltage			
No.	Data Name	Value	Modify Ranges
0	Cell Voltage High 3 (V)	3.65	3~4.5
1	Cell Voltage High 2 (V)	3.6	3~4.5
2	Cell Voltage High 1 (V)	3.58	3~4.5
3	Cell Voltage Low 3 (V)	2.7	2~3.3
4	Cell Voltage Low 2 (V)	2.8	2~3.3
5	Cell Voltage Low 1 (V)	2.87	2~3.3
6	Cell Voltage Diff High 3 (V)	0.5	0.1~0.5
7	Cell Voltage Diff High 2 (V)	0.3	0.1~0.5
8	Cell Voltage Diff High 1 (V)	0.25	0.1~0.5
9	Full Charge Voltage (V)	3.55(The maximum voltage value of the battery cluster when it triggers the charging prohibition state during charging).	3.2~4.5
10	Nominal Voltage (V)	3.2	2.5~4
11	Full Discharge Voltage (V)	2.9(The minimum voltage value at which the battery cluster triggers the discharge-inhibited state during discharge).	2~3.2
12	Volt Ratio	1	1~5
13	Cell Voltage Recovery (V)	0.1	0.1~0.5
14	Cell Volt Diff Recovery (V)	0.1	0.1~0.5
15	Balance Mode	0(Passive balancing system, balancing mode set to 0; Active balancing system: balancing mode set to 1 (active and passive balancing switch).	'-1~1

Current			
No.	Data Name	Value	Modify Ranges
0	Current Sensor Model(A)	300	-
1	Charge Max Curent(A)	157	100-900
2	Discharge Max Current(A)	-204	(-900)-(-100)
3	Charge Current High 3(A)	172	1~900
4	Charge Curent High 2(A)	167	1~900
5	Charge Curent High 1(A)	162	1~900
6	Charge Start Current(A)	3	1~20
7	Discharge Start Current(A)	-3	(-20) ~ (-1)
8	Start Current Deviation(A)	2	1~20
9	Discharge Current High 3(A)	-219.1	(-900) ~ (-1)
10	Discharge Current High 2(A)	-214.1	(-900) ~ (-1)
11	Discharge Current High 1(A)	-209.1	(-900) ~ (-1)
12	Current Calibrate Enable	0	0~1
13	Min Current of SOC Calculate(A)	0.3	0~9.9
14	Charge Start Current(A)	-(Current calibration charge and discharge parameters)	1~280
15	Discharge Start Current(A)		1~280
16	Start Current Deviation(A)		(-280) ~ (-1)
17	Discharge Current High 3(A)		(-280) ~ (-1)
18	Discharge Current High 2(A)		-

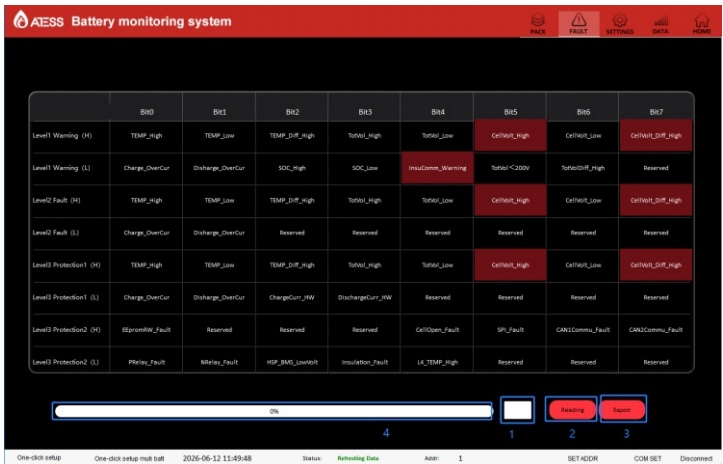
Temparature			
No.	Data Name	Value	Modify Ranges
0	Temp Diff Max 3(°C)	25	1~25
1	Temp Diff Max 2(°C)	15	1~25
2	Temp Diff Max 1(°C)	12	1~25
3	Charge Temp. High 3(°C)	55	35~65
4	Charge Temp. High 2(°C)	50	35~65
5	Charge Temp. High 1(°C)	45	35~65

Temperature			
No.	Data Name	Value	Modify Ranges
6	Charge Temp. Low 3(°C)	-10	(-20) ~10
7	Charge Temp. Low 2(°C)	-5	(-20) ~10
8	Charge Temp. Low 1(°C)	0	(-20) ~10
9	Discharge Temp. High 3(°C)	55	35~65
10	Discharge Temp. High 2(°C)	53	35~65
11	Discharge Temp. High 1(°C)	50	35~65
12	Discharge Temp. Low 3(°C)	-20	(-20) ~10
13	Discharge Temp. Low 2(°C)	-15	(-20) ~10
14	Discharge Temp Low 1(°C)	-5	(-20) ~10

Network Information			
No.	Data Name	Value	Modify Ranges
0	Network Connection Status	0: 4G Connect 1: Wifi Connect 2: Disconnect (Enerlog Connection Status)	-
1	Server Address	47.57.139.213	'0'~'9'; 'A'~'Z'
2	Server Port	5279	'0'~'9'; 'A'~'Z'
3	Firmware Version	-(Enerlog Firmware Version)	'0'~'9'; 'A'~'Z'
4	WIFI Account	-(When connecting to the WIFI module, fill in the WIFI module account)	'0'~'9'; 'A'~'Z'
5	WIFI Password	-(When connecting to the WIFI module, fill in the WIFI module password)	'0'~'9'; 'A'~'Z'
6	CC	-(Fill in the verification code of the Enerlog)	'0'~'9'; 'A'~'Z'
7	4G Serial Number	-(Fill in the Enerlog serial number)	'0'~'9'; 'A'~'Z'

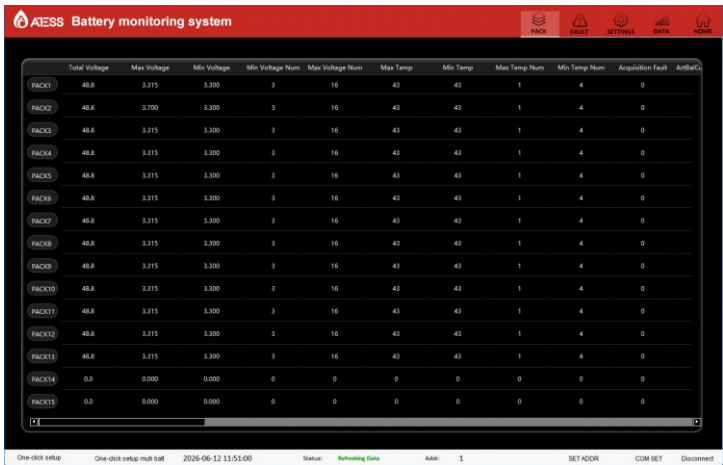
● Fault

- a. Output the number of exported fault entries (1~64)
- b. Click Reading
- c. Observe the progress bar reaching 100%
- d. Click Export



● Pack

The scroll bar allows you to view the voltage, temperature, and BMU version number of the battery cell.



5.3 View and configure battery parameters via screen

5.3.1 Wiring between battery and screen

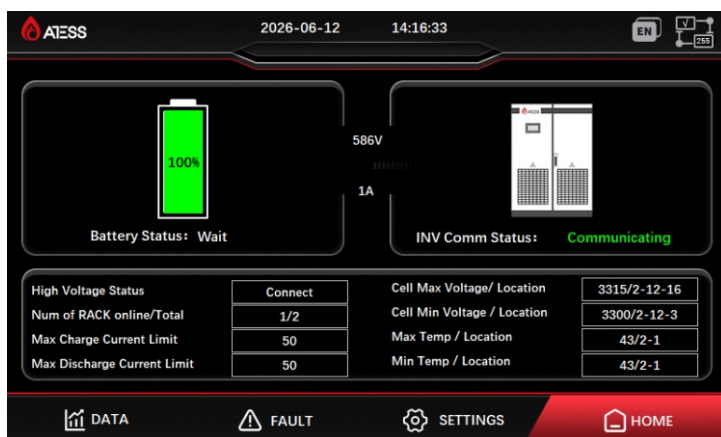
Requirement tools:

- 485 communication cable
- Screen

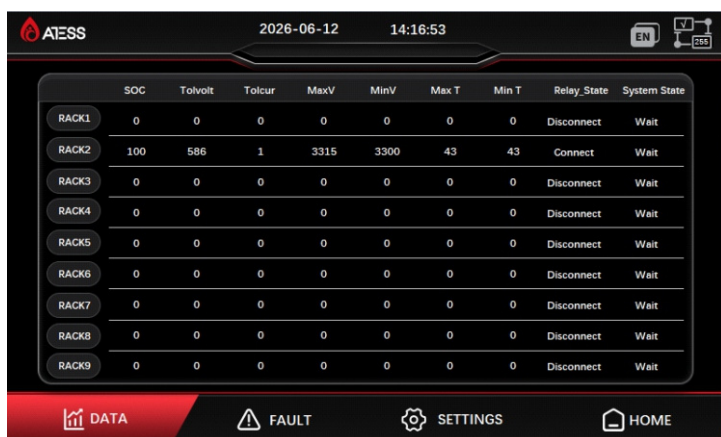
Connect the RJ45 terminal of black communication cable to COM1 or COM2 of the BPU, connect the 485 wires to the screen of the DC cabinet.

5.3.2 Parameter viewing and setting

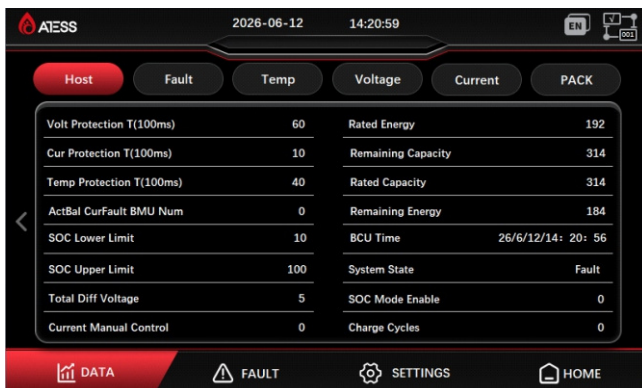
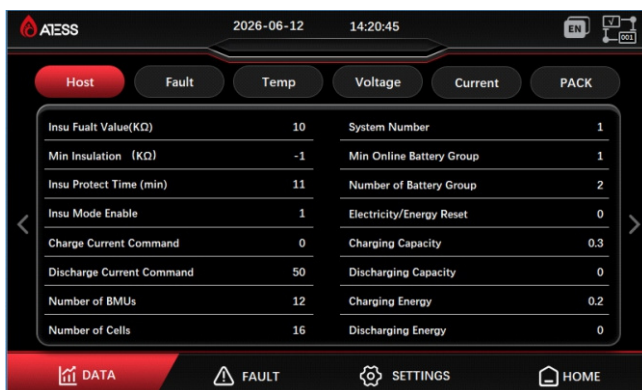
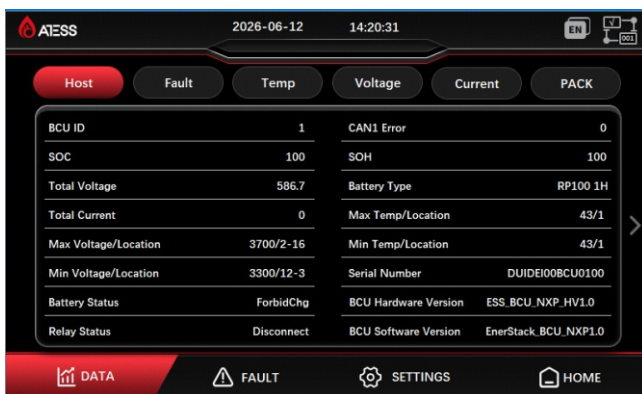
A. Home



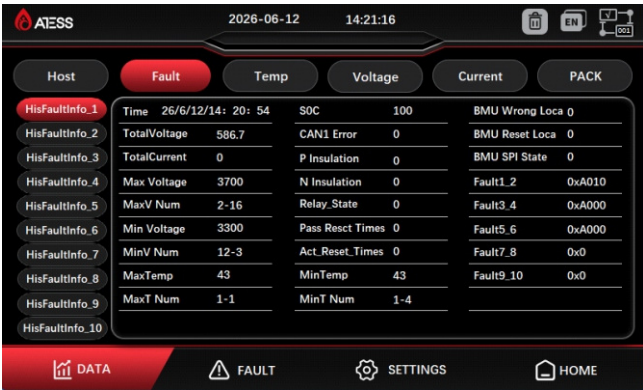
B. DATA



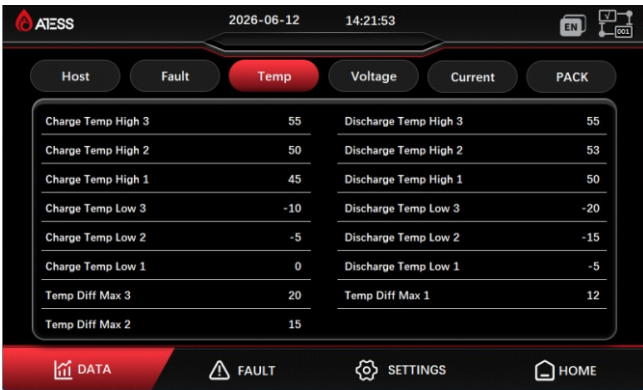
a. Host page



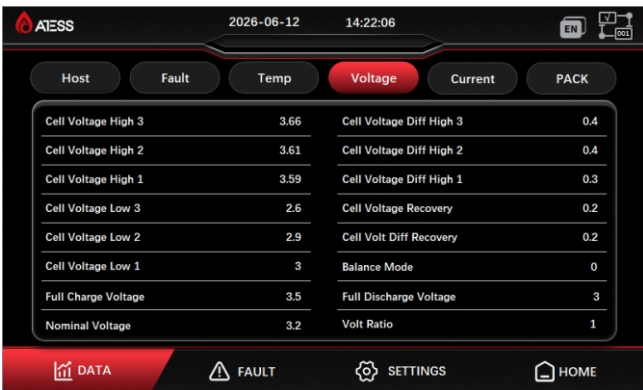
b. Fault page



c. Temp page



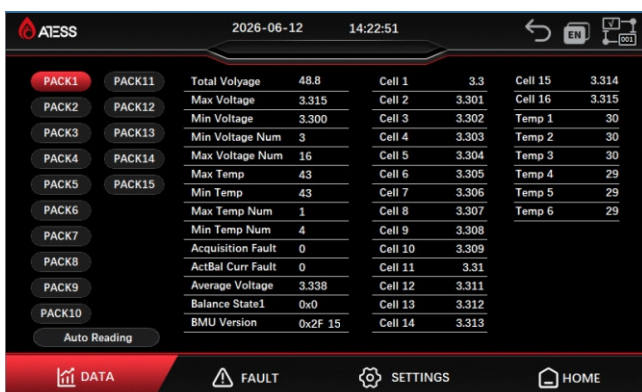
d. Voltage page



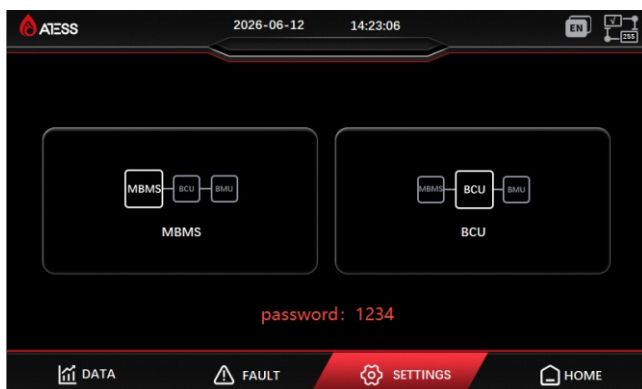
e. Current page



f. Pack page

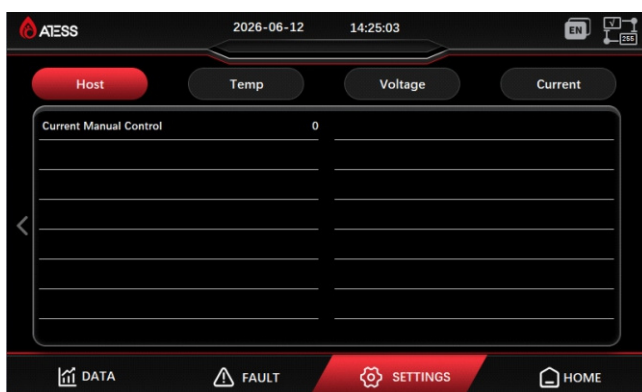
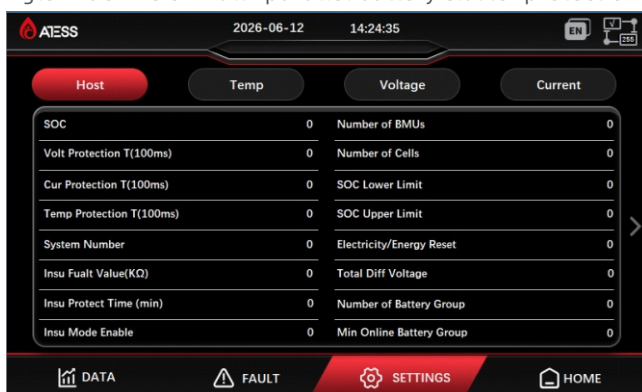


C. Settings



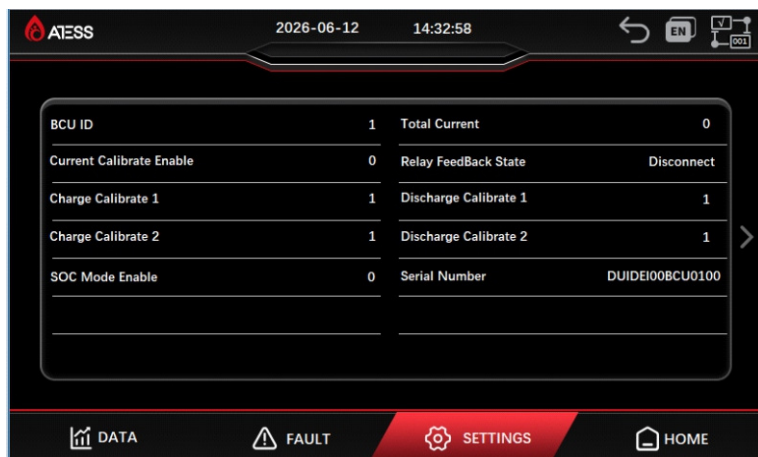
MBMS setting

Modify the single-machine or multi-parallel battery cluster protection Parameters.



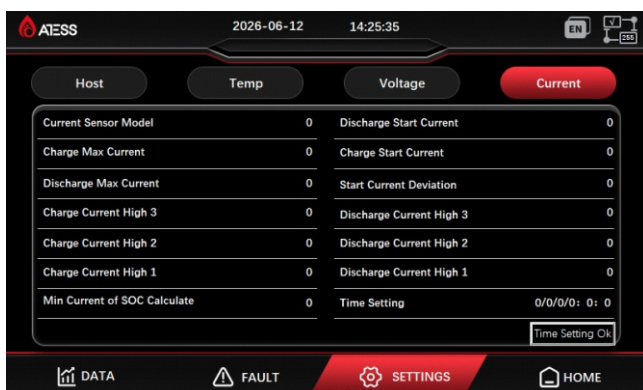
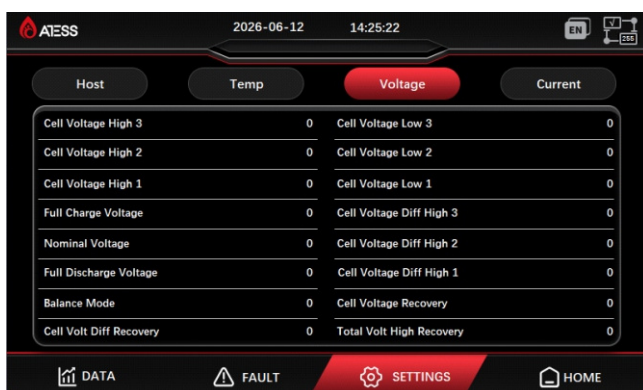
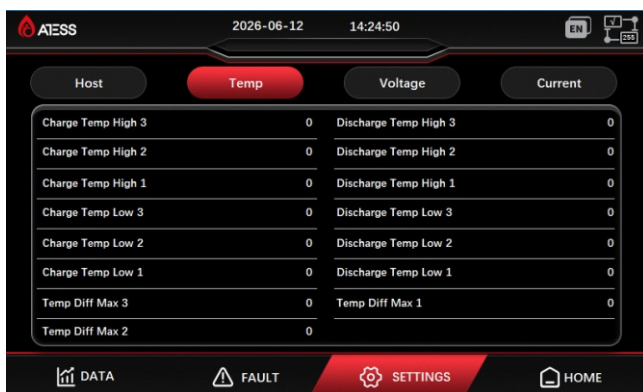
BCU setting

Modify the independent parameters of the battery cluster.



D. FAULT





6 Maintenance

6.1 Troubleshooting

DANGER!

The battery system is a high-voltage DC system. Ensure that the installation area of the Enerstack314 is stable and reliable.



Please confirm that the battery system is switched off before connecting. Electric shock and damage to the inverter may be caused if the battery is connected to the inverter directly without being powered off.

Otherwise, the system cannot operate properly. The voltage of the battery is too high, please pay attention to self-protection during measurement.

NO.	Problem	Possible Reason	Solution
1	Pressing the "WAKE" button does not turn on the device, and the "D" light remains off.	The BPU DC breaker is not switched on.	Switch the BPU DC breaker on.
		The ON/OFF switch of the BPU is not switched on.	Switch the ON/OFF switch on.
		The battery voltage is severely low (<100V) or damaged.	Contact the battery manufacturer for further inspection.
2	Pressing the "WAKE" button turn on the device, the "D" light will turn on, but the display status of the light is yellow or red.	Improper placement of batteries and BPU during installation, resulting in misalignment of blind insertion pins.	Check the blind insertion pin and reset the misplaced blind insertion pin.
		Battery system protection.	Charge the battery to leave protection mode or contact the battery manufacturer for further inspection.

NO.	Problem	Possible Reason	Solution
3	The battery has no voltage output.	Battery changes into over-discharged.	Charge the battery to leave protection mode.
		Communication failure with inverter.	Check if the connection of the communication cable and PIN definition are correct.
		Inverter has an error.	Check for inverter errors and restore the inverter.
4	Battery Shutdown.	BPU DC circuit breaker open circuit.	Switch the BPU DC breaker on.
		Battery changes into over discharged.	Charge the battery to leave protection mode.
		Battery is in sleep mode.	Press and hold the WAKE button for approx. 15s.
5	SOC jump during battery charging and discharging process.	The battery system has not undergone full charge calibration for a long time.	Press and hold the WAKE button for approx. 15s.
		Inconsistent SOC of battery module.	The system performs 10 ~ 50 full charge balancing cycles (depending on the SOC difference of the module, the number of full charge balancing will vary); or fully charge each battery module separately with BPU and DC power supply.
		Differences in battery cell consistency or damage.	Contact the battery manufacturer for further inspection.

The battery system have a non-resettable function to stop operation. If the voltage, current, temperature and other information reach the system lock threshold, the system will enter the system lock state. In this state, the system cannot be restored by restarting the system or any other operation.

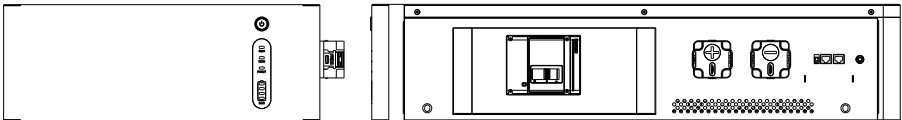
Please contact the professional operating system of this product and then ask them to exit the system lock state.

6.2 Replacement of Main Components

Replacing the Battery Controller (BPU)

Turn off the entire battery system. Ensure that the negative and positive terminals are de-energized.

- Turn the POWER ON knob to OFF, battery shutdown.
- Switch the BPU DC BREAKER to OFF position.



- Disconnect the connecting cable.
- Remove the 4 screws on the BPU and remove the BPU from the system.
- Exchange BPU. Then fix it with 4 screws.
- After replacing the new BPU, the battery self-test needs to be performed again (Refer to P21 Battery system self-test).

6.3 Battery Maintenance



DANGER!

Battery maintenance should only be carried out by professional and authorized persons.
Turn off the battery system first carrying out maintenance.

Voltage check:

[Periodical maintenance] Check the voltage of the battery system with the monitoring software. Check whether the system voltage is normal. For example: Check whether the single cell voltage is out of range.

Voltage check:

[Periodical maintenance] Check the SOC of the battery system with the monitoring software. Check whether the SOC of the batteries is normal.

Cable check:

[Periodical maintenance] Visually inspect all cables of the battery system. Check whether the cables are broken, aging or loose.

Balancing:

[Periodical maintenance] The battery system will become unbalanced if it has not been charged fully for a long time. Solution: Perform balancing maintenance (fully charge) every 10~12 month. Generally this maintenance progress needs to be completed when external devices such as the monitoring software and battery and inverter have proper communication.

Output relay check:

[Periodical maintenance] Under low load (low current), check the output relay OFF and ON condition; listen if the relay clicks, which means that it switches off and on normally.

7 Storage

For long-term storage (more than 3 months), the battery cells should be stored within the temperature range of 5 to 45°C, relative humidity <65% and non-corrosive gases.

The battery module should be stored within the temperature range of 5 to 45°C, dry, clean and well ventilated environment. The battery should be charged to 50 - 55% SOC before storage.

We recommend activating the battery system (discharge and charge) every 3 months.

**CAUTION!**

The lifespan of the battery will be greatly reduced if you do not follow above instructions to store the battery for a long term.

**CAUTION!**

Corresponding to the battery system that has been installed and used normally, it is necessary to regularly fully charge the battery to calibrate the SOC. It is recommended to fully charge and calibrate at least once every 2 weeks.

8 Shipment

The battery module is pre-charged to 30% SOC or according to customer requirements before shipment. The remaining capacity of battery cells is determined by the storage time and condition after shipment.

The battery modules meet UN38.3 certificate standard.

In particular, special rules for the carriage of goods on the road and the current dangerous goods law, specifically ADR (European Convention on the International Carriage of Dangerous Goods by Road), as amended, must be observed.



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